MYTHS ABOUT WATER DEMAND: TRUTH OR FICTION?

2019 Urban Water Demand Roundtable
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Denver has some unique water use drivers…

- Green roofs
- Legal marijuana
- Craft breweries
...but is there cause for alarm?

The Sky is Falling
Do we have enough water for these unique consumers?

Evaluated 3 Case Studies:
1. Green Roofs
2. Legal recreational and medicinal marijuana
3. Craft Breweries

Looked at several factors:
• Major anticipated issues
• Process (e.g., How did they become part of the service area?)
• What do we know about these industries or subjects?
• Water consumption facts and lessons
Green Roofs: Issues

Denver voted for the most stringent green roof mandate in the US in 2017 – green roofs on all new and existing buildings over 25,000 square feet.

Goals:
1. Improvement of green space
2. Reduction of Denver’s heat island (3rd worst in US!)
3. GHG Emissions reductions
4. Water/stormwater management
Green Roofs: Process and Findings

• Early concerns about watering requirements in Denver’s semi-arid climate meant that the City waited to implement the ordinance so they could properly amend it

• **Green Roof Task Force** was formed to guide the evolution of the ordinance – DW participated on it

• Ordinance revised to avoid “unintended consequences” and lower implementation costs

• A new ordinance was created by task force and approved by City Council that accomplished the goals of voters but accounted for other stakeholder interests too
Green Roofs: MYTH! <1%

Water Consumption Facts and Lessons:

• Early estimates said green roof water demand could push to ~577 AF/yr.

• Task Force improved the ordinance to lessen its impacts & reduce water demand

• Under the approved ordinance demand will eventually reach ~310 AF/yr.

• Stakeholder process allowed major concerns to be raised

Source: https://www.denvergov.org/content/dam/denvergov/Portals/696/documents/Other_forms_and_guides/Green%20Building%20Ordinance%20Open%20House_Nov%2015%202018.pdf
Legal Marijuana: Issues

• Colorado’s rules limit commercial marijuana cultivation mostly to indoor settings that rely on the municipal water distribution system.

• With little data at the time it was legalized, early predictions suggested each pot plant could use 6 gallons of water per day*!

• Effects of this for DW were unknown…


Legal Marijuana: Process and Findings

- Currently there are 600+ marijuana facilities in the city limits
- Marijuana tourism has spiked demand (over $1B annually as of 2017)
- Grow facilities are:
  - Located in mostly urban industrial spaces
  - Reliant on municipal water supply
  - Heavily regulated
    - DDPHE Database
    - RF ID on all plants
    - Water use is monitored through each growth phase
Legal Marijuana: Process and Findings
Marijuana:  **MYTH! <1%**

- 6 gallons per day study figure came from a 2010 Humboldt Grower’s Association Land Use guideline and was later used by CA Department of Fish and Wildlife – not a reliable go-by

- Denver Water staff have worked directly with growers

- Consumption data from our customer records was reviewed

- **Each pot plant used 9-12 gallons per plant per year** – with no seasonal peaking use
Craft Breweries: Issues & Trends

Top Large Metro Areas
1. Portland - Vancouver - Beaverton, OR
2. Denver - Aurora, CO
3. Seattle - Tacoma, WA
4. Portland - Biddeford, ME
5. Colorado Springs, CO
6. Santa Rosa - Petaluma, CA

Top Small Metro Areas
1. Bend, OR
2. Boulder, CO
3. Fort Collins - Loveland, CO
4. Corvallis, OR
5. Missoula, MT
6. Burlington - South Burlington, VT

U.S. BEER SALES VOLUME GROWTH 2017

- Overall Beer: -1.2%
  - 196,278,490 BBLs

- Craft Beer: 5.0%
  - 24,868,276 BBLs

- Import Beer: 3.2%
  - 34,428,490 BBLs

- Export Craft Beer: 3.6%
  - 482,309 BBLs
Craft Breweries: Process and Findings

- Approximately 1/3 of Colorado breweries are in Denver Water’s service area (>100)
- DW worked with several breweries to understand their water use
- Tracked consumption data for some
Craft Breweries: Benchmarking Study

CONSUMPTION BY USE

- Bar Operation & Utilities: 40%
- Brewhouse (brewing and tank cleaning): 35%
- Cellar (Knock out and Equipment Cleaning): 19%
- Packaging: 6%
Craft Breweries: MYTH! <1%

• Less than 1% of Denver Water consumption is from craft breweries

• There is a significant increase in efficiency as breweries scale up in size

• Vast majority of Denver breweries are considered small to very small by the Brewer’s Association

• Cleaning is often a huge water user and can vary significantly between employees
QUESTIONS?

Thank you!